AG Contract No: KR05-0107TRN
ADOT ECS File: JPA 04-130
Project No. AC-IM-HES-017-B(005)A
Project: ASU Research
Section: Badger Springs-Big Bug
TRACS No.: H6115 01C
Budget Source Item #: 17404

INTERAGENCY SERVICES AGREEMENT

BETWEEN
THE STATE OF ARIZONA
AND
THE ARIZONA STATE UNIVERSITY

THIS AGREEMENT is entered into this date March 9, 2005, pursuant to Arizona Revised Statutes § 11-951 through 11-954, as amended between the STATE OF ARIZONA, acting by and through its DEPARTMENT OF TRANPORTATION (the "Sponsor") and the ARIZONA BOARD OF REGENTS, ARIZONA, acting for and on behalf of the THE ARIZONA STATE UNIVERSITY, (the "University).

RECITALS

WHEREAS the Sponsor is empowered by Arizona Revised Statutes § 28-401 to enter into this Agreement and has delegated to the undersigned the authority to execute this Agreement on behalf of the Sponsor.

WHEREAS the University is empowered by Arizona Revised Statutes § 15-1626 to enter into this Agreement and has delegated to the undersigned authority to execute this Agreement on behalf of the University.

WHEREAS Sponsor desires that the University perform certain services as described in the scope of work, attached hereto and incorporated herein as "Exhibit A" and the University desires to perform such services upon and subject to the terms and conditions hereinafter set forth.

NOW, THEREFORE, the parties agree as follows:

ARTICLE I. SCOPE OF WORK. The University shall use all reasonable efforts to perform the services and deliver any reports or other items specified in "Exhibit A".

ARTICLE II. PROJECT DIRECTOR. The University shall provide Dr. Kamil Kaloush Department of Civil and Environmental Engineering, as Project Director for work under this Agreement. The Project Director shall not be replaced without prior consent of the Sponsor.

ARTICLE III. PERIOD OF PERFORMANCE. This Agreement shall begin on January 15, 2005 and shall terminate on February 27, 2006. This Agreement may be modified or extended at any time by mutual written consent of both parties.

NO. 27407
Filed with the Secretary of State
Date Filed: 03/09/05
Janice K. Brewer
Secretary of State
By: Linda D. Greenwald

ARTICLE IV SPECIAL PROVISIONS.

1. **Compensation.** Compensation shall be on a firm-fixed-price basis. Sponsor shall pay the University a lump sum amount of $60,000.00, for the University's services hereunder. Sponsor shall remit not less than fifty-percent (50%) ($30,000.00), of the total contract price upon execution by both parties of this Agreement. The remaining amount of the contract price ($30,000.00), due under this Agreement, shall be paid no more than monthly, upon receipt of invoices. Invoices are due and payable within thirty-days (30).

2. **Publications.** Sponsor recognizes that under the University's policy the results of work performed under this Agreement must be publishable and agrees that the University and its employees and students engaged in work under this Agreement shall be free to present at symposia or professional meetings, and to publish in journals, theses or dissertations, or otherwise of their own choosing, methods and results of the work performed under this Agreement. Upon written request by Sponsor, copies of proposed manuscripts will be furnished to Sponsor for review prior to publication. In no event will the University delay publication for more than thirty-days (30) from date of submittal of manuscript for Sponsor review.

3. **Confidentiality:** Sponsor and Contractor may choose, from time to time, in connection with work contemplated under this Agreement, to disclose proprietary or confidential information to each other (Confidential Information). All such disclosures must be in writing and marked as Confidential Information. The Parties will use reasonable efforts to prevent the disclosure to unauthorized third parties of any Confidential Information of the other Party and will use such information only for the purposes of this Agreement, and for three (3) years after the termination of this Agreement; provided that the receiving Party's obligations hereunder shall not apply to information that:

    A. Is already in the receiving Party's possession at the time of disclosure; or,
    B. Is or later becomes part of the public domain through no fault of the receiving Party; or,
    C. Is received from a third party with no duty of confidentiality to the disclosing party; or,
    D. Was developed independently by the receiving party prior to disclosure; or,
    E Is required to be disclosed by law or regulation.

    Any information that is transmitted orally or visually, in order to be protected hereunder, shall be identified as such by the disclosing party at the time of disclosure, and identified in writing to the receiving party, as Confidential Information, within thirty (30) days after such oral or visual disclosure. The contractor shall retain the right to refuse acceptance of such Confidential Information, which is not required for the purposes of this agreement

4. **Notices.** All notices under this Agreement given by either party to the other shall be in writing and shall be sent by U.S. Postal Service, first class, facsimile or e-mail Addresses are as follows:

For THE UNIVERSITY: Office for Research & Sponsored Projects Admin.

Arizona State University
P.O. Box 873503
Tempe, Arizona 85287-3503

Attn: Karina Lugo Ortega
Sponsored Projects Officer
e-mail: Klortega@asu.edu
cc: Dr. Kamil Kaloush
Department of Civil & Environmental Engineering
Phone: 480-965-0029
Fax: 480-965-0649

For Contracting
Arizona Department of Transportation
Joint Project Administration
205 S. 17th Avenue, Mail Drop 616E
Phoenix, AZ 85007
FAX: 602-712-7424

For Sponsor: Cliff Passmore, Resident Engineer
Cordes Junction Construction, ORG 8832
6989 E. 2nd Street
Prescott, AZ 86314
(928) 759-2426 ext. 3629

ARTICLE V. GENERAL PROVISIONS.

1. **Waivers.** No waiver, amendment or modification of this Agreement shall be valid or binding unless written and signed by the parties. Waiver by either party of any breach or default of any clause of this Agreement by the other party shall not operate as a waiver of any previous or future default or breach of the same or different clause of this Agreement.

2. **Assignment.** Neither party may assign any rights hereunder without the express, written, prior consent of both parties.

3. **Governing Law.** This Agreement shall be governed by and construed in accordance with the laws of the State of Arizona.

4 **Non-Availability of Funds:** Every payment obligation of the State and University under this Agreement is conditioned upon the availability of funds appropriated or allocated for the payment of such obligation. If funds are not allocated and available for the continuance of this Agreement, this Agreement may be terminated by the State and University at the end of the period for which the funds are available. No liability shall accrue to the State and University in the event this provision is exercised as a result of termination under this paragraph

5. **Conflict of Interest.** This Agreement is subject to the provisions of A.R.S. 38-511.

6. **Independent Contractor.** The Univeristy is an independent contractor and shall be free to exercise its discretion and independent judgment as to the method and means of performance of its work hereunder The Univeristy employees shall not be considered employees of Sponsor, and neither the Univeristy nor Sponsor personnel will, by virtue of this Agreement, be entitled or eligible, by reason of this Agreement, to participate in any benefits or privileges given or extended by the other party to its employees.

7. **Termination.** Either party may at any time terminate this Agreement by giving the other party not less than thirty (30) days prior written notice. In the event this Agreement is canceled by Sponsor, Sponsor shall remain responsible for payment to the Univeristy for all work performed through the date of termination and for reimbursement to the Univeristy of all non-cancelable commitments but, in no event, shall reimbursement exceed the available funds appropriated for this Project incurred in the conduct of the research. Non-cancelable commitments shall include employment commitments to the Univeristy personnel through the end of the semester following any such termination by Sponsor. In the event this Agreement is terminated by either party any unused funds from the advance will be returned.

8. **Arbitration.** In the event of any dispute, claim, question, or disagreement arising from or relating to this Agreement or the breach thereof, the parties hereto shall use their best efforts to settle the dispute, claim, question, or disagreement. To this effect, they shall consult and negotiate with each other in good faith and, recognizing their mutual interests, attempt to reach a just and equitable solution satisfactory to both parties. If they do not reach such solution within a period of 60 days, then, upon notice by either party to the other, all disputes, claims, questions, or differences may be settled by arbitration administered by the American Arbitration Association in accordance with the provisions of its Commercial Arbitration Rules. The provisions of Arizona Revised Statutes § 35-214 ar applicable to this Agreement. In the event of any controversy, which may arise out of this Agreement, the parties hereto agree to abide by required arbitration as is set forth for public works contracts in Arizona Revised Statutes § 12-1518.

9 **Insurance.** The Univeristy maintains general liability insurance and worker's compensation coverage as required by State Law and pertinent Federal Laws and regulations under the State of Arizona Risk Management Plan.

10. **Liability.** It is understood that neither party to this Agreement agrees to indemnify the other party or hold harmless the other party from liability hereunder.

11. **Nondiscrimination.** This Agreement is subject to all applicable provisions of the Americans with Disabilities Act (Public Law 101-336, 42 U.S.C. 12101-12213) all applicable Federal Regulations under the Act, including 28 CFR Parts 35 and 36. The parties to this Agreement shall comply with Executive Order Number 99-04 issued by the Governor of the State of Arizona and incorporated herein by reference regarding "Non-Discrimination.

12. **News Release.** Sponsor may not use the name of the Univeristy in news releases, publicity, advertising, or other promotion, without the prior written consent of the Univeristy, except for documents used for internal consumption by Sponsor

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by its duly authorized representatives on the respective dates entered below.

ARIZONA BOARD OF REGENTS,
FOR AND ON BEHALF OF
ARIZONA STATE UNIVERSITY

By: Cheryl L Conover
CHERYL L. CONOVER
Interim Director Research Administration

Date: 2-17-05

STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION

By: Douglas A. Forstie
DOUGLAS A. FORSTIE, P.E.
Deputy State Engineer, Operations

Date: 03-01-05

PROJECT DIRECTOR APPROVAL
I have reviewed the terms of this contract and they are acceptable to me. I request that an authorized signatory execute this contract on behalf of the University.

By _____ 2-11-05
Kamil Kaloush Date

December 21, 2004

Mr. Cliff Passmore, Resident Engineer
Cordes Junction Construction, ORG 8832
6989 E. 2nd Street
Prescott, AZ. 86314

(928) 759-2426 ext. 3629
Fax: 928-759-2395

Subject: Special Testing of I-17 Pavement Rehabilitation Asphalt Mixtures
Badger Springs – Big Bug / MP 256-263
ADOT Project number: 17 YV 256 H 611501C, AC-IM-HES-017-B (005) A

Dear Mr. Passmore,

Attached are two copies of the special testing work plan for the above referenced project. We will start the work on this study as soon as we receive the mixtures from the construction project and finalize the IGA.

If you have any questions or need to discuss this work plan further, please do not hesitate to contact me at 480-965-5509.

I look forward to working with you on this project.

Sincerely,

Kamil E. Kaloush, Ph.D., P.E.
Assistant Professor

cc *James Delton, ADOT*
Paul Burch, ADOT
Ali Zareh, ADOT
Matthew Witczak, ASU
Karina Lugo, ASU

Special Testing of I-17 Pavement Rehabilitation Asphalt Mixtures – Badger Springs – Big Bug

Submitted to:

ADOT Payson Construction
200 N. Colcord Ste. C
Payson, AZ. 85541

Submitted by:

Kamil E. Kaloush, Ph.D., P.E.
Assistant Professor

Matthew W. Witczak, Ph.D.
Professor

Ira A. Fulton School of Engineering
Department of Civil and Environmental Engineering Tempe,
AZ 85287-5306

ARIZONA STATE UNIVERSITY

December 21, 2004

Research Work Plan

Special Testing of I-17 Pavement Rehabilitation Asphalt Mixtures
Badger Springs – Big Bug / MP 256-263

Introduction

This project is a continuation of the on-going efforts between the Arizona Department of Transportation (ADOT), Arizona State University and the local industry to build a database of typical engineering properties of asphalt mixtures used in Arizona. One goal of this effort is to advance the engineering technology and implementation of Asphalt Rubber (AR) projects through well-defined research and special laboratory testing activities. These activities support paving processes that combine laboratory research and field performance to ascertain the quality of AR pavement construction.

Study Objectives

The objective of this study is to conduct a laboratory experimental program to obtain typical engineering material properties for two asphalt rubber mixtures and one conventional mixture used in the pavement rehabilitation of I-17, Badger Springs – Big Bug / MP 256-263, ADOT Project number: 17 YV 256 H 611501C, AC-IM-HES-017-B(005)A.

Scope of Work

All mixtures will be sampled during construction by the contractor designated by ADOT. Approximately, 1500 lbs of each mix will be needed for the testing program as noted in Items 2, 3 and 4 of ADOT's Materials Design Report number 02-125-1 (dated December 11, 2003). Five 1-gallon samples of each rubber modified binder used for the mixtures will be also collected by the contractor. The mixes and binders will be transported to ASU laboratories. At ASU, the mixes will be re-heated and compacted using 6-inch diameter gyratory molds for triaxial specimens. Beam specimens will be compacted according to AASHTO TP8 test protocols. The target air void level for the test specimens will be similar to those achieved in the field. One 4-inch diameter samples will be cored from each gyratory plug. The sample ends will be sawed to arrive at typical test specimens of 4-inch in diameter and 6-inch in height. Thickness and bulk densities will be measured and the samples will be stored in plastic bags in preparation for the testing program outlined below.

Data obtained from these mixtures will be summarized in spreadsheets. The spreadsheet will contain information such as binder tests and information, aggregates, volumetric mix properties, and the results of the advanced dynamic material characterization tests. These tests include; triaxial shear strength, dynamic (complex) modulus, static creep and repeated load for permanent deformation characterization; indirect tensile creep test for thermal cracking characterization; and flexural beam tests for fatigue cracking evaluation.

The data can be also used to establish a relative ranking of the mixtures according to their expected rutting or cracking potential.

Binder Tests

ASU has been developing for ADOT an AC Binder Characterization Database to develop properties of typical AC binders that are commonly used in ADOT construction projects. The binders evaluated in this research will be subjected to tests that will provide ASTM Ai-VTSi consistency-temperature relationships. These tests will be conducted for original conditions and will include: Penetration at 15 and 25°C, Ring and Ball Softening Point at 60°C, and Rotational Viscosities at selected temperature range.

Mixture Tests

Each mixture will be subjected to the following testing program:

Triaxial Shear Strength

The first test that will be conducted on each mix is the classical shear strength test. The test will be conducted unconfined and using two levels of confinements. The test will provide the standard cohesion and the angle of internal friction parameters, which describe the failure, envelop of the mix. One temperature will be used: 100°F, using two replicates at each confinement level.

Dynamic (Complex) Modulus

Dynamic Complex) Moduli will be evaluated at a full factorial of 5 Temp levels (0, 40, 70, 100, and 130°F) and 6 frequencies (0.1, 0.5, 1, 5, 10 and 25 Hz). An electrohydraulic dynamic load system will be used to apply continuously sinusoidal loads at the temperature-frequency combinations noted. Analyses of the data will include computations of the parameters that include: phase angle and complex modulus for each mix. Master moduli curves will also be developed for each mixture. This testing will be conducted unconfined, but confined testing will be done for the open graded mixture. Three replicates will be utilized for each mix / test state condition.

Static Creep Tests

The third type of load response test that will be conducted on each mix will be the static creep / flow time test. Three replicates will be used for each stress level and temperature combinations. Creep tests will be conducted at 100°F, in an unconfined and confined state of stress. Compliance parameters as well as the flow time (tertiary failure) will be determined from each test.

Repeated Load Permanent Deformation Tests

The fourth material load response test to be conducted on each mixture will be the repeated load permanent deformation test. Similar to creep testing, permanent deformation tests will be conducted at 100°F, confined and unconfined state of stress. A haversine pulse load of 0.1 sec and 0.9 sec dwell (rest time) will be applied for a test duration of appropriately 3 hours (or until the test specimen fails). This will result in approximately 10,000 cycles. Permanent deformation and tertiary flow parameters will be obtained and analyzed for each test.

Indirect Tensile Creep Tests

The fifth type of load response test that will be conducted on each mix will be the indirect tensile static creep test. Three replicates will be used at one stress level and three temperatures: 32, 14, -4°F. Creep tests will be conducted for about 1000 seconds, and compliance parameters will be determined from each test.

Beam Fatigue Tests

The last type of load response test that will be conducted on each mix will be the fatigue cracking test. A constant strain test will be utilized. Three temperatures: 40, 70, and 100°F and a minimum of six strain levels will be used. Flexural parameters such as stiffness and dissipated energy will be will be determined from each test.

Final Report

Upon completion of all work activities, a written report summarizing the results of the findings will be prepared and submitted. The project activities will be completed within 12 months from the time the mixes are received at ASU.

Study Cost

The cost to conduct the work detailed in this proposal as outlined in ADOT's Materials Design Report is a lump sum of $20,000 per mix for a total of $60,000.

ATTORNEY GENERAL
CIVIL DIVISION
TRANSPORTATION SECTION

MEMORANDUM

Jeffrey T. Murray
Assistant Attorney General

Direct: (602) 542-8859
Fax: (602) 542-3646

INTERGOVERNMENTAL AGREEMENT
DETERMINATION

A.G. Contract No. KR05-0107TRN (**JPA 04-130**), an Agreement between public agencies, has been reviewed pursuant to A.R.S. § 11-952, as amended, by the Undersigned Assistant Attorney General who has determined that it is in the proper form and is within the powers and authority granted to the State of Arizona.

No opinion is expressed as to the authority of the remaining Parties, other than the State or its agencies, to enter into said Agreement.

DATED March 3rd, 2005.

TERRY GODDARD
Attorney General

JEFFREY T. MURRAY
Assistant Attorney General
Transportation Section

JTM:dgr
Attachment
893910